

REMARKS

The Examiner rejected claims 1, 2, 4, 9 and 17 under 35 U.S.C. §102(b) as anticipated by European Patent Application No. 0362937 (hereinafter EP '937). That rejection is traversed.

EP '937 discloses a safety control system used in meat skinning and trimming machines. The system includes a metal conductive glove worn by an operator of the machinery. The glove is connected to a safety switch which disconnects or reverses a motor when the glove completes a circuit by contacting a portion of the machine.

Claims 1, 2, 4 and 9 all describe woodworking machines having one or more drive electrodes disposed adjacent a shaft, and applicant asserts that EP '937 fails to show such a drive electrode. Nevertheless, applicant hereby amends those claims to require one or more drive electrodes "disposed adjacent and spaced apart from the shaft to form a capacitive coupling with the shaft." EP '937 fails to show either a drive electrode adjacent and spaced apart from a shaft or a capacitive coupling between one or more drive electrodes and a shaft. Instead, EP '937 shows a wire conductor 39 connected between feed wheel 3 and control circuit 50. Thus, claims 1, 2, 4 and 9 distinguish EP '937.

Claim 17 describes a woodworking machine having "a capacitive coupling between the contact detection system and the cutting tool ... where the contact detection system is configured to impart an electrical signal onto the cutting tool through the capacitive coupling." EP '937 fails to show such a capacitive coupling. As stated, EP '937 shows a wire conductor 39 connected between feed wheel 3 and control circuit 50. Thus, claim 17 distinguishes EP '937.

The Examiner also rejected claim 17 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 3,858,095 to Friemann et al. That rejection is traversed. Friemann discloses a protective circuit for a band cutter. The circuit includes an oscillator with a voltage output

connected to a bridge circuit. The bridge circuit is balanced until an operator touches the band cutter, at which time the bridge circuit becomes unbalanced and a voltage is transmitted to an amplifier circuit which, in turn, trips a relay to stop the motor. The bridge circuit in Friemann is conductively coupled between the oscillator 2 and amplifier 4, as shown in Figure 1. The capacitance of the band cutter is part of the bridge circuit, and the band cutter is connected to the other components in the bridge circuit by contact rollers 12. Rollers 12 are in contact with the band cutter, as explained in column 3 lines 7-20 and as shown in Figure 2. In contrast, claim 17 includes "a capacitive coupling between the contact detection system and the cutting tool." As stated, Friemann discloses a conductive contact between rollers 12 and band cutter 5; Friemann does not disclose a capacitive coupling between a contact detection system and a cutting tool. Thus, claim 17 distinguishes Friemann.

The Examiner rejected claim 3 under 35 U.S.C. §103(a) as obvious in light of EP '937 combined with U.S. Patent No. 5,587,618 to Hathaway. The Examiner cited Hathaway as showing insulated bearings as required by claim 3. Claim 3, however, depends from claim 1 and therefore has been amended to require one or more drive electrodes "disposed adjacent and spaced apart from the shaft to form a capacitive coupling with the shaft." EP '937 and Hathaway both fail to disclose such drive electrodes, and therefore, claim 3 is not obvious in light of the combination of EP '937 and Hathaway. MPEP §2143.03 (all claim limitations must be taught or suggested by the cited references to establish prima facie obviousness).

The Examiner also rejected claims 1-18 under 35 U.S.C. §103(a) as obvious in light of U.S. Patent No. 3,785,230 to Lokey combined with U.S. Patent No. 1,551,900 to Morrow. Applicant traverses those rejections.

Whether the claims are obvious depends on the following factors: 1) the scope and content of the prior art, 2) the differences between the prior art and the claims at issue, 3) the level of ordinary skill in the pertinent art, and 4) secondary considerations such as a long felt need, the failure of others to satisfy that need, and industry awards and recognition. Graham v. John Deere, 383 U.S. 1, 148 USPQ 459 (1966). These factors are discussed below.

Scope and Content of the Prior Art

Applicant accepts, for purposes of this action, that the scope and content of the prior art includes the Lokey and Morrow patents cited by the Examiner.

Differences Between the Prior Art and the Claims

Claims 1-9 and 12-18 all require a contact detection system that detects contact between a person and a cutting tool, and the Examiner cited Lokey as disclosing such a system. Lokey, however, discloses a system intended to detect *proximity* between a person and a cutting tool. Lokey does not disclose a system to detect *contact* between a person and a cutting tool. Nevertheless, the Examiner said it is simply a matter of sensitivity and adjustment to set Lokey's proximity detection system to detect contact instead of proximity. Applicant respectfully disagrees.

First, Lokey expressly teaches proximity detection only. Lokey never says or suggests his system can be used to detect contact between a person and a cutting tool. This is a significant difference because proximity detection systems work to avoid injuries, while a contact detection system works to minimize the severity of injuries. Thus, modifying Lokey to detect contact instead of proximity would change the basic principle of operation of Lokey, which is impermissible in an obviousness inquiry. MPEP §2143.01.

Second, the proximity detection system in Lokey causes a warning bell to sound and a brake to stop the blade when a person moves too close to the blade. Neither the warning bell nor brake disclosed in Lokey would work with a contact detection system. The warning bell signals that a user's hand is too close to the blade. That bell would be of no use in a contact detection system because contact between the blade and user would have already occurred. More importantly, the brake disclosed in Lokey requires a solenoid to push cam brakes or a brake block against the blade. Solenoids, however, typically take 5-15 milliseconds to charge before the armature in the solenoid starts moving. That reaction is too slow to use with a contact detection system because the user can receive a serious injury in the time it takes the solenoid to charge. In other words, if Lokey detected contact instead of proximity, Lokey would not prevent serious injuries in part because of the time required to charge the solenoid. Therefore, Lokey's warning bell and brake teach away from contact detection, and modifying Lokey to detect contact instead of proximity would render Lokey's brake unsatisfactory for its intended purpose of preventing injuries, both of which support a conclusion of non-obviousness. MPEP §2143.01.

Third, there is no teaching in Lokey how to adjust the proximity sensor so that it will detect contact but not proximity. Nothing in Lokey suggests that turning knob 19 to the minimum setting will detect contact, as suggested by the Examiner. It is more likely that turning knob 19 to the minimum setting will simply cause the sensor to detect close proximity because detecting proximity is all that Lokey teaches. Also, a sensor designed to detect proximity must be able to detect much smaller changes in capacitance than a contact detection system. Thus, it is likely that the proximity sensor in Lokey would always detect proximity before contact. Finally, a circuit used to sense contact would be different than a circuit to detect proximity because, as stated, proximity sensors look for very small changes in capacitance. Lokey clearly fails to

disclose a circuit that could detect contact, and as a result, there is no reasonable expectation that Lokey's sensor could detect contact instead of proximity. MPEP §2143.02.

Claims 10 and 11 require "an electrically isolated arbor," "an excitation system adapted to generate an electrical signal," and "a capacitive coupling adapted to capacitively couple the excitation system to the arbor to transfer at least a portion of the electrical signal to the blade." The Examiner said "Morrow teaches attaching a drive electrode 8 through a shaft 9 in order to provide a capacitance, or stored charge, in a blade 1" Morrow, however, only teaches connecting "a box 8" in which is located a "means for producing a high frequency, high electric potential," and the box is connected to a blade via "a flanged threaded cap or sleeve 9, screw-threaded upon the end of the shaft." Morrow, page 2, lines 49-50. Cap 9 "is of conducting material, and is in contact with the saw" blade. Id., page 2, lines 53-54. Thus, Morrow only teaches direct contact between the blade and the means for producing the electric potential; Morrow does not teach a capacitive coupling. Morrow also teaches using a non-conductive shaft; Morrow fails to teach or suggest using an isolated conductive shaft. Claims 10 and 11, in contrast, require an isolated arbor and a capacitive coupling. Lokey also fails to disclose an isolated arbor or a capacitive coupling to the arbor. Therefore, claims 10 and 11 are not obvious in light of the combination of Lokey and Morrow because not all claim limitations are taught or suggested by the references. MPEP §2143.03.

The Level of Ordinary Skill

Applicant believes the level of ordinary skill in the art is a mechanical engineer with some experience. This level of skill supports the conclusion that applicant's claims are non-obvious because a mechanical engineer would likely not know how to use capacitive couplings to detect contact between a person and the blade or to transfer an electrical signal through an

arbor to the blade via a capacitive coupling. An electrical engineer would understand these issues better, but electrical engineers typically do not design woodworking machines.

Secondary Considerations

Every year in the United States there are over 90,000 people severely injured with power saws, according to the U.S. Consumer Product Safety Commission, National Electronic Injury Surveillance System, Directorate for Epidemiology, 2001.¹ These are all severe injuries that require a visit to a hospital emergency room. About 10% of these injuries result in amputations. The number and severity of these injuries clearly shows there is a long felt need for safer woodworking machines. The fact that others have tried to solve this problem is evidenced by the Friemann, Lokey and Morrow references patents cited by the Examiner. However, the continued high number of severe injuries shows that those attempts have failed. Fortunately, woodworking machines constructed as required by the currently pending claims have the potential to significantly reduce the severity of these injuries. The long felt need for safer woodworking machines and the failure of others to satisfy that need supports the conclusion that the claims are non-obvious.

Additionally, the technology which is the basis for the woodworking machines described by the currently pending claims has been recognized as new and innovative by various entities associated with the woodworking industry, as shown by the following awards (See Gass Decl. ¶5):

- Chairman's Commendation. The U.S. Consumer Product Safety Commission awarded the technology a Chairman's Commendation for significant contributions to product safety. That award was reported nationally on CNN Headline News.

¹ These statistics are publicly available from the U.S. Consumer Product Safety Commission.

- Challenger's Award. At an International Woodworking Fair in Atlanta, Georgia, the technology won the Challenger's Award, which is the woodworking industry's highest honor. It recognizes the most innovative and technically advanced improvements to woodworking equipment.

- Popular Science – One of the 100 Best New Innovations. The magazine *Popular Science* identified the technology as one of the 100 best new innovations of 2002.

- Workbench Magazine – One of the Top 10 Tools for 2003. *Workbench* magazine included saws incorporating the technology on its list of the top 10 innovative tools for 2003.

- Woodwork Institute of California Endorsement. The Woodwork Institute of California has endorsed the technology, stating:

As a Trade Association in the construction industry (representing over 250 manufacturers of architectural millwork with an excess of 4,000 employees, all of whom use saws of one type or another) we find your SawStop technology and its potential of eliminating or reducing worker injury of extreme significance. Generally, we would not endorse a commercial product; however the potential benefit to our members and their employees of implementing the SawStop technology on the tools used within our industry overrides such.

- Editor's Choice Award, Tools of the Trade. The magazine *Tools of the Trade* awarded the technology its 2001 Editor's Choice Award in recognition of its significance.

The technology that is the basis for the currently pending claims has also been the subject of extensive media coverage, including national coverage by CNN Headline News, by the television program NEXT@CNN, by the Associated Press, and by Paul Harvey on the ABC Radio Network. (See Gass Decl. ¶6.) That media coverage indicates that the technology is novel and noteworthy. Numerous magazines have published reports about the technology, and have referred to it as "revolutionary" and "ingenious." Id.

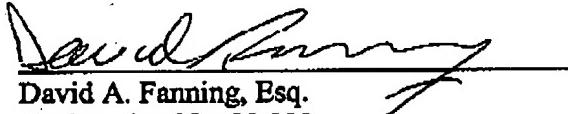
Summary Concerning Non-Obviousness

The significant differences between the claims and the cited references, the level of skill, the long felt but unsolved need for woodworking machines constructed as required by applicant's claims, and the industry recognition and awards given to the technology all support the conclusion that applicant's claims are not obvious.

Applicant discussed these issues with the Examiner on the telephone on October 17, 2003, and applicant thanks the Examiner for that discussion. In light of the amendments and remarks set forth above, applicant requests the Examiner to allow the currently pending claims. Please call the undersigned if there are any questions.

Respectfully submitted,

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I hereby certify that this correspondence is being facsimile transmitted to the U.S. Patent and Trademark Office, Attention: Examiner Thomas J. Druan, Jr., Group Art Unit 3724, to facsimile number: (703) 872-9306 on October 21, 2003.



David A. Fanning
Date of Signature: October 21, 2003